

## ABSTRACT

The present invention provides methods and compositions useful for coding and decoding complex mixtures of test units. These methods and compositions use coding and decoding oligonucleotides that comprise standard nucleobases and also non-standard nucleobases that selectively base pair with other non-standard nucleobases. These non-standard nucleobases display little or no selective base pairing with standard nucleobases. The use of the non-standard nucleobases increases the diversity of the coding oligonucleotides and reduces the cross-reactivity of the coding and/or decoding oligonucleotides with other molecules.

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